OVERVIEW

Brazil has a large and diversified economy that offers US companies many opportunities to export their goods and services. As Brazil's largest single trading partner, the US enjoys a strong reputation in a variety of sectors. This report will cover relevant aspects of the Industrial Automation sector and it is one of a series that is published by the US Commercial Service's team of sector experts throughout the year. If you do not see an opportunity for your product here, please check out our other reports at www.buyusa.gov/brazil and consider contacting us directly to find out if we can help you export to Brazil.

SUMMARY

Brazil spent 2004 regaining the confidence of the markets and dealing with the fallout of a currency crisis in the second half of 2002. GDP grew by 5 percent in 2004 as the government implemented very tight fiscal and monetary policies to calm financial-market nerves and mitigate the inflationary effects of the previous year's currency depreciation. After investors' initial doubts, the newly elected Lula government continued to reassure markets that it would continue the orthodox economic and financial policies of his predecessor, Fernando Henrique Cardoso. The exchange rate is now fluctuating around R$ 2.6 / US$ 1 coming from as high as R$ 3.1 / US$ 1 in June 2004 thus favoring imports.

The economic growth achieved in 2004 was mostly based on the promotion of Brazilian exports, which surpassed the mark of US$ 100 billion for the first time in history. Even during economic slow down in 2003, exporting sectors grew significantly and there was continued investment in capital goods and automation. Strong prospects for the Industrial Automation sector include airspace, automotive, pulp and paper, steel, chemical, oil, and industrial machinery. Agriculture is another bright spot.

Perhaps because of its size, the Brazilian markets have tended to look inward. With the opening of Brazil to imports in the early 90s, there was a surge to modernize and be able to match up to international competitors in both quality and price. Today, productivity improvements and exports objectives have led to technological updating of control and measurement instrumentation, sensors, transmitters, means of communication between items of equipment, supervision and control systems, and many software applications ranging from the factory floor to overall company planning and management.

Approximately 60 percent of the Brazilian industrial automation market is supplied by imports while the remaining 40 percent is produced or assembled locally with considerable portion of imported components.

MARKET HIGHLIGHTS & BEST PROSPECTS

According to ABINEE, the Brazilian Electrical and Electronics Industry Association, the Brazilian market for industrial automation and instrumentation is estimated at US$ 1, 4 billion. The market grew 20 percent from 2003 to 2004. For 2005, industry associations and market experts expect another 21 percent increase in market size. Europe is the number one supplier of industrial automation products and services to Brazil with a share of 42 percent of all imports. The United States comes next, with a 41 percent share and increasing. From 2003 to 2004 imports from the Unites States grew 27.7 percent against 26.3 percent from Europe. Asia comes in third with a 10 percent share of imports.

US$ millions	2003	2004	2005 est*
Market Size	1,212	1,452	1,757
Local Production	581	706	854
Exports	76	114	138
Imports (Global)	707	860	1,041
Imports from US	276	353	427

Source: ABINEE – Brazilian Electrical and Electronics Industry Association
Exchange Rate of R$ 2.96/US$ 1.00.
*Statistical data are unofficial estimates. 2004 Figures are projected estimates.

STATISTICAL DATA
The traditional pneumatic instruments used before the opening of the Brazilian market in the 1990s are now rarely found in any industrial operation, only few applications still use this kind of equipment for safety reasons. Currently, analogical instruments are widely used. However, in the medium-term, micro-processed instruments such as: intelligent transmitters, multi-loop controllers, and Programmable Logic Controllers (PLC) should replace them.

At first, only large companies felt the push towards modernization and placed importance on controlling industrial processes as well as the quality of air and water used and dispensed by industrial operations. Today, smaller companies are increasingly changing their attitude towards new technology and the pressure to remain competitive local and internationally. The advent of micro-processed instruments, which lowered the

costs of increasing automation contributed to the entrance of small and medium-sized Brazilian companies in automation.

Exporting sectors such as steel, pulp & paper, juice, petrochemical, and others have always been strong buyers of process controls instrumentation and automation equipment; this trend is expected to expand as more companies, large and small, want to enter into international markets. Lula's government is strongly promoting Brazil all over the world and giving important fiscal incentives to exporting companies. Various public and private agencies are developing exporting programs to educate and support potential exporters. For these companies, automation and modernization of industrial processes is crucial so that they can comply with international safety, quality, and environmental requirements.

The most common certification sought by Brazilian companies are the ISOs, according to SBAC – the Brazilian Systems of Compliance Evaluation, there are 6,038 ISO 9001 and 595 ISO 14001 certified companies in Brazil.

According to experts, in addition to the usual macroeconomic factors that affect all industry sectors and investments in modernization, legal issues have a strong impact on the Brazil market. Brazil does not regulate industrial activities with federal law but rather each state has its own legislation with which companies must comply in order to operate. In that sense, some states are stricter then others. In many cases CETESB's (Brazil's Environmental Sanitation and Technology Agency) regulations are used as benchmark.

The foreign exchange rate is also a critical factor for this industry via import costs. In the end of 2002 and beginning of 2003, the political and economic uncertainties in Brazil and other major economies, resulted in fluctuations in the exchange rate that reached over R$4 (Reais – Brazilian currency) for US$1. Most recently the Dollar is facing significant devaluation to the Real priced at around R$ 2.5 / US$ 1. Even though the lower exchange rate favors U.S. exports to Brazil, there are many other factors for U.S. companies to take into account when trying to enter the Brazilian markets.

Best Prospects

HTS	Product	Imports in 2004 FOB US$Million
9032.89.90	Other Instruments for Industrial Automation	143
9031.80.90	Other Instruments and Machinery of Measurement and Control	115
9027.80.90	Other Instruments for Analyzes and Measurement	45
8537.10.20	Programmable Logic Controllers	40
9030.40.90	Other Instruments used in Telecommunications	32
9026.20.90	Measurement Inst. – Pressure	30
8537.10.11	Numeric Commands	20
9030.83.90	Instruments for Measurement and Control of Elect. Current	20
9032.89.89	Other Instruments for Automation	19
9026.10.19	Measurement Inst. - Flow	18
9027.10.00	Gas Analyzers	17

HTS	Product	Imports in 2004 FOB US$Million
9026.80.00	Other Measurement Instruments	15
9032.89.82	Temperature Control Instruments	13
9027.50.20	Photometers	12
9027.20.12	Chromatographers – Liquid	10
9030.89.90	Other Instruments for Measurement and Control of Elect. Current	10

COMPETITIVE ANALYSIS

According to ABINEE's statistics, 60 percent of the Brazilian industrial automation market is supplied by imports; the remaining 40% are produced locally but in many cases with most of the components imported.

Brazil is also starting to make some inroads into the exports of process controls instruments and automation equipment. In 2004 Brazil exported US$ 114 million, the equivalent to 16 percent of its local production. The main exporter is SMAR, a Brazilian company and important international player in the instrumentation and automation market. SMAR is well known for developing compact and high performance smart transmitters; incorporating control and mathematical functions in field devices; and launching a chip for the physical layer of the international FIELDBUS. Brazil is not generally a producer of process controls instruments, but it is strongly service-oriented, especially in engineering and application projects.

The United States' share of the Brazilian industrial automation market is slightly smaller than the European Union's, 41 and 42 percent respectively. With the recent upturn of the economy, the valuation of the Dollar, and the valuation of the Euro, U.S. exports have an opportunity to increase participation in industrial automation trade balance with Brazil.

Major Players

Company	Estimated Market Share
SMAR – Brazil	30%
Emerson – USA	25%
Yokogawa – Japan	20%
Honeywell – USA	10%
Others	15%

END-USER ANALYSIS

Some of the major sectors investing in automation are:

Oil & Gas
State-owned Petrobras' exploration and production monopoly ended in 1998 and over 35 international petroleum firms have subsequently entered Brazil.

Since 1998, 343 oil blocks have been awarded during 6 rounds of oil concession offerings, the most recent of which was in August 2004. This is not to say that the importance of Petrobras has diminished. To the contrary, Petrobras was awarded the majority of these new concessions and it is expanding dramatically. A large portion of opportunities for US firms are linked to servicing or supplying Petrobras.

Petrobras, currently Brazil's largest company with net revenues of US$ 32 billion in 2003, is seeking to become a major global energy firm with objectives to both internationalize its operations as well as to dramatically increase production and refining within Brazil so that Brazil becomes oil self-sufficient by 2007.

In order to achieve this growth Petrobras plans to invest US$ 34.3 billion between 2003 to 2007 to increase capacity to 2.2 million barrels of oil a day. Oil exploration and production (E&P) is expected to account for 70 percent of Petrobras' annual investments. A total of five new oil production platforms are planned to add to the 98 Petrobras currently has in its portfolio.

Petrobras has also recently discovered 419 billion cubic meters of natural gas reserves in the BS-100 and BS-500 blocks at Santos Basin, which are located just over 100 km from the coast. This amount represents an approximate 180% increase over Brazil's proven gas reserves, currently estimated at 231 billion cubic meters.

Petrochemical

The Brazilian Bank for Economic and Social Development (BNDES) has a US$840 million line of credit for the petrochemical sector. 70 percent of this amount is expected to be disbursed this year. A recent study indicates that Brazil needs US$ 12 billion investment in the petrochemical sector until to 2013 to be able to cope with the demand for both the domestic and international markets.

Steel

Brazil is the eighth largest steel manufacturer, with approximately 50% of the steel production of Latin America and 3.2% of the world. Approximately 85% of the Brazilian crude steel production is made in integrated steelworks whereas 15% are made in non-integrated mills; 92% of it is made in continuous casting process and 8% in conventional casting; 80% are made in oxygen (BOF) process, 20% using electric process. Regarding types of steel products made in Brazil, nearly 59% of the total output is flat products and 41% are long products.

Brazilian manufacturers are concentrated in the states of Minas Gerais (41% of total production), Rio de Janeiro (20%), Espirito Santo (19%) and São Paulo (13%). The largest manufacturers are Usiminas / Cosipa with a combined output of 7 million metric tons per year, Gerdau with 3.5 million tons, and CSN with 4.5 million tons.

Energy - Ethanol

Brazil currently produces approximately 11 billion liters of ethanol annually, down from a peak of 16 billion liters in 1997. Brazil has one of the largest and most technologically advanced programs of bio-fuels of the world, developed since the 1970s. More than 3 million cars are powered exclusively by hydrated ethanol, consuming more than 5 billion liters/year. In addition, anhydrous ethanol (production of 6 billion liters/year) is added to gasoline in the percentage of 25 percent, the highest in the world.

Mining

The Brazilian market for mining equipment is one of the largest in the world. Brazil is a major producer of several minerals, especially iron ore, gold, bauxite, kaolin, manganese, phosphate rock and niobium. It is the fifth largest mineral producer in the world. The mineral potential of the country has not been fully assessed and ongoing geological surveys may still find significant deposits. There are also many well-known deposits, especially of copper and gold, that are not being currently explored, but that could be developed in the future if world market prices increase.

Most of the mining activities in Brazil are open pit. The local market for underground mining equipment is relatively small, when compared to the market for open pit mining. In the long term (three to seven years), however, there will be a trend to increase the number of underground mines.

CVRD, Companhia Vale do Rio Doce, the largest Brazilian mining company, is responsible for nearly one third of the mineral output of this country, in terms of value. CVRD was privatized in May 1997, and there are no longer any state-owned mining operations in Brazil. CVRD has a copper project calling for a combined total investment of more than US$600 million. Expansion of the existing gold mines is the second most promising area for the near future.

Environment & Water Treatment

The concern with environmental issues started in Brazil in the mid-eighties, with the creation of a number of environmental agencies at the municipal, state and federal levels and strict environmental legislation. Since that time, private and public companies have been increasingly investing in environmental technologies. Environmental awareness is growing in Brazil, especially in the larger cities, and a number of projects are being proposed to reduce air, water and solid waste pollution.

Purchase Decision Process

The decision process when buying industrial automation equipment and instruments in Brazil will depend on what is being sold, if we are talking about so-called commodities for replacement such as sensors, valves, transmitters, etc, purchase is normally decided by the purchase department. However, when you offer high value-added equipment, like PLCs, automation software, or a complete solution project, engineers will be the key decision makers. An approach that a lot of companies find successful is to work first with technicians, if the technicians are convinced of products quality and performance they will make recommendations to the individual or department that authorizes the purchase. Companies selling industrial automation solution report that such consultative sales take in average four months to be concluded.

In many cases, buyers of automation solution and instrumentation require training and specialized technical assistance before and after sales. It is crucial that an American company entering the Brazilian market finds a suitable partner with the knowledge and structure to provide high quality ongoing services after the sale.

In general, buyers will consider three factors: technical assistance offered, brand, and price. However, for the low-end equipment, price is the major competitive advantage taken into account.

MARKET ACCESS

American products have good reputation and are well accepted in the Brazilian market. In general American exporters find it of key importance to partner with a local distributor or representative who has the structure to provide before and after sales support as well as technical assistance. Small and medium-sized end users tend to avoid importing equipment directly and will prefer to work with local companies capable of supplying spare parts and technical assistance.

Distribution Channels

The distribution channels vary according to each company's business strategy, size, and segment. Large companies exporting to Brazil will generally have their own sales office in Brazil selling directly to end-users; medium and small-sized companies normally sell through representatives, distributors, or joint-venture partners. A mix of distribution channels is also possible for companies with their own offices in the country. Some companies have representatives to sell commodities, and deal directly with costumers buying more sophisticated equipment.

Marketing Tools

The most common marketing tools used by industrial automation companies in Brazil are trade shows, in-company presentations, advertisements in specialty magazines and industry directories, and newsletters.

Tariff Barriers

Since 1990, Brazil has made substantial progress in reducing traditional border trade barriers (tariffs, import licensing, etc.), even though tariff rates in many areas are still high.

Tariffs, in general, are the primary instrument in Brazil for regulating imports. With few exceptions, tariffs are ad valorem, with rates between 0-35 percent, levied on the c.i.f. value of the import. Brazil's average applied tariff is around 14 percent. The average tariff in 1990, by contrast, was 32 percent. Brazil also maintains a higher average tariff on processed items than on semi-processed goods and raw materials. The United States continues to lobby for tariff reductions on products of interest to U.S. firms.

Brazil and its Southern Common Market (Mercosul) partners, Argentina, Paraguay and Uruguay, implemented the Mercosul Common External Tariff (CET) on January 1, 1995.

Non-Tariff Barriers

The most significant non-tariff barrier used to be the communication protocols. Until recently, large manufacturers imposed their exclusive protocols as a mean to lock in clients and guarantee market share. Currently, the market is characterized by open protocols. This has resulted in greater power of choice to costumers and also reduced barriers to new entrants, especially smaller suppliers, both local and international.

Some specific requirements:

- Explosion resistant instruments require international and local certification
  - INMETRO - National Institute of Metrology
  - ANB – European Standard.
- For instruments to be used in classified areas, it is required the CEPEL certification which can be obtained through INMETRO.

Major Trade Shows

ISA – International Society of Automation and Instrumentation
http://www.isashow.com.br/site/isashow_english/index.php

CONAI – International Congress and Trade Show of Industrial Automation
http://www.conai.com.br

Important Publications

Controle & Instrumentação – Magazine
http://www.controleinstrumentacao.com.br

Metrologia & Instrumentação
http://www.banasmetrologia.com.br

InTech Brasil
http://www.intechbrasil.com.br/site/intech/index2.php

Guia Nei
http://www.guianei.com

Key Contacts

- For more information about export opportunities in Brazil please contact US Commercial Service Trade Specialist Paulo Rodrigues at: Paulo.Rodrigues@mail.doc.gov
- For a good overview of exporting to Brazil, please look at our US Country Commercial Guide to Brazil: www.focusbrazil.org.br/ccg
- US Commercial Service in Brazil: www.buyusa.gov/brazil
- For more reports on this sector in other countries, please visit Export.gov's site for US Commercial Service Market Research Worldwide: http://www.export.gov/marketresearch.html

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